UNITED STATES MARINE CORPS
U.S. MARINE CORPS AIR STATION
YUMA, ARIZONA 85369-5000

StaO 5100.7C
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04 OCT 1995

STATION ORDER 5100.7C

From: Commanding Officer
To: Distribution

Subj: STANDING OPERATING PROCEDURES FOR HANDLING, STORAGE AND DISPOSAL OF CHLORINE ABOARD MCAS YUMA, AZ

1. Purpose. To implement procedures for handling, storing, use, and disposal of chlorine aboard MCAS Yuma. This is to comply with current safety requirements for maintaining a safe working environment and to prevent accidental death, injury, and property damage.

2. Cancellation. StaO 5100.7B.

3. Information. Liquid chlorine is a non-flammable compressed gas though it will support combustion if given the right conditions. Anhydrous chlorine, either liquid or gas, will not corrode steel at ordinary temperatures. It will react vigorously with most metals at elevated temperatures.

a. Chlorine becomes very corrosive by forming hydrochloric and hypochlorous acids when exposed to moisture. Gaseous chlorine is approximately two and a half times heavier than air and has a characteristic odor and a greenish yellow color.

b. Liquid chlorine is a skin irritant. Prolonged contact will produce chemical burns. At ordinary temperatures and pressures it will vaporize to a gas. Chlorine gas is primarily a respiratory irritant. It is so intensely irritating that concentrations above 3-5 parts per million (by volume) are readily detectable by the normal person. In higher concentrations the severely irritating effect of the gas makes it unlikely any person will remain in a chlorine contaminated atmosphere unless unconscious or trapped. In extreme cases difficulty breathing may cause death by suffocation.

4. Operating Procedures

a. Storage

(1) Do not use the chlorinator rooms at the Officer and Enlisted swimming pools for storing any swimming pool chemicals other than the minimum amount needed for a daily basis. This includes only one working chlorine cylinder and one standby cylinder. Lock up all chemicals used in the pool areas. All other chlorine use and storage areas will contain the minimum amount of chlorine necessary with operational needs.

(2) Store one hundred and fifty pound chlorine cylinders in buildings 1950 and 1971. Store them in the upright position and safely secured. Return all empty cylinders to Station Supply as soon as possible. Store empty cylinders in buildings 1950 or 1971 before turn-in, segregated from all full cylinders and clearly mark as empty.

b. Safety

(1) Follow all safety precautions when handling chemicals and chlorine cylinders. It is the responsibility of each operator to have in their possession all required safety gear when working with chemicals and chlorine cylinders. Safety apparel and equipment are available from the Facilities Management Department.

(2) It is the responsibility of each individual to report any safety discrepancies or necessary procedure changes for handling chlorine to their immediate supervisor.

(3) All cylinders will have their valves in the "off" position with their cylinder valve protection caps securely attached to the cylinder valve and head when not actually connected to the chlorinator.

(4) All operators of the MCAS Yuma Water Plant will be familiar with the procedures and information in this Station Order.

c. Transportation

(1) The Water Plant operators will use the one ton stake truck from Motor Transport to collect the 150 pound chlorine cylinders from Supply. Safely secure all cylinders, whether empty or full, in an upright position to the bed of the truck. A Self Contained Breathing Apparatus (SCBA) will be in the truck at all times when transporting chlorine cylinders.

(2) The vendor delivers one ton chlorine cylinders to water plant buildings 1950 and 1971 only. They will not be delivered to Supply Department, building 324.

(3) Use the available hand cart when delivering cylinders from the truck to the swimming pools' to the chlorinator rooms.

d. Daily Procedures

(1) Check all chlorine cylinders, including their respective pipes and fittings, for leaks at least once during each shift using commercial ammonia water. If there is a strong odor of chlorine gas then do leak checks more often during the shift.

(2) Check both the new and empty cylinders for leaks when changing cylinders and replace the empty cylinder's cap immediately.

(3) Open the new cylinder one quarter of a turn and leave the valve wrench in place. Do not open the valve more than one complete turn.

(4) Lock the exterior door of the chlorinator room in the open position when entered.

(5) It is a matter of good practice to check the SCBA by each operator when starting their shift. The requirement, however, is for a monthly inspection for proper SCBA function.

5. Emergency Procedures

a. Chlorine Leak. **Anyone discovering a chlorine gas leak shall immediately notify the Station Fire Department at extension 2333.** Only trained and authorized personnel equipped with SCBA will investigate and attempt to correct a chlorine gas leak. The Fire Department will notify and coordinate with other agencies as necessary. Keep vials of commercial ammonia water in all areas where chlorine is used to aid authorized personnel in detecting the exact location of the leak. Never use water on a leak. The corrosive action of water and chlorine combined will **always** make a leak worse. Never immerse or throw a leaking chlorine container into a body of water.

(1) Equipment and Piping Leaks. Shut off the chlorine supply to the equipment. Start repair procedures immediately.

(2) Valve Leaks. Stop leaks around valve stems by tightening the packing nut or gland in a clockwise direction. If this does not stop the leak, close the container valve and relieve the chlorine under pressure in the outlet piping. Apply the outlet cap or plug if a container valve does not shut off tight. One ton chlorine cylinders have two valves. Roll the cylinder to position the leaking valve on top. If it keeps leaking follow the procedures in the next paragraph.

(3) Container Leak. If possible turn the container to allow gas instead of liquid chlorine to escape. Apply the appropriate emergency kit device if available. The operator should try to slow the using rate of chlorine if the cylinder is working. Evacuate the area if the leak cannot be stopped. Secure the chlorine danger area until the chlorine is safely dissipated. Emergency assistance may be requested from McKesson Chemical Company of Glendale, Arizona, telephone number (602)934-3281.

b. Fire. Remove all chlorine containers from the fire zone immediately. All chlorine containers used aboard MCAS Yuma have fusible plugs that begin to melt at 158 degrees Fahrenheit and 165 degrees Fahrenheit. The probability of the containers leaking is great if left in a fire zone. Tell the Fire Department if the containers cannot be removed so evacuation of personnel and appropriate personal protective equipment is used. **If chlorine is not**

leaking, spray water on the containers in the fire zone to keep them as cool as possible.

6. First Aid. Immediately remove the affected personnel from the contaminated area. Prompt treatment is essential for chlorine victims.

a. Eye Contamination. Immediately flush with water and do not stop until medical help arrives. Call the Branch Medical Clinic at extension 2111 for an ambulance.

b. Skin Contamination. Flush the skin with water. Also wash with soap if available. Flush chlorine soaked clothing with water and remove the clothes under running water. Wash the exposed skin again and transport the victim to Branch Medical.

c. Inhalation. Anyone overcome by or seriously exposed to chlorine gas should be immediately taken to Branch Medical Clinic. Give artificial respiration if the victim stops breathing. Call extension 2111 for an ambulance.

A. M. TORRANCE
By direction

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